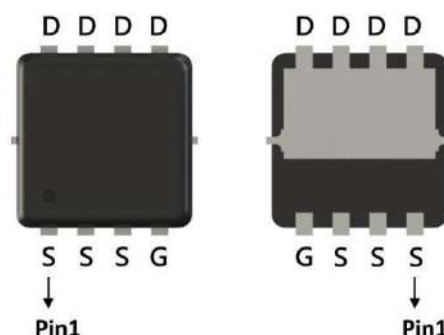


N-Channel Enhancement Mode Power MOSFET

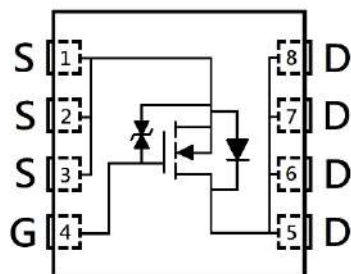
Features:

- Low Gate Charge
- Fast Switching Characteristic
- ESD protected gate

DFN3×3



BV_{DSS}	100V
$I_D@V_{GS}=10V, T_C=25^{\circ}C$	14A
$I_D@V_{GS}=10V, T_A=25^{\circ}C$	3.8A
$R_{DS(ON) typ.}@V_{GS}=10V, I_D=2A$	55mΩ



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KSPRE050N10KR	DFN3×3 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (T_A=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current @ V _{GS} =10V, T _C =25°C	I _D	14	A
Continuous Drain Current @ V _{GS} =10V, T _C =100°C		9	
Continuous Drain Current @ V _{GS} =10V, T _A =25°C		3.8	
Continuous Drain Current @ V _{GS} =10V, T _A =70°C		3	
Pulsed Drain Current	I _{DM}	35	
Continuous Body Diode Forward Current @ T _C =25°C	I _S	14	
Pulsed Body Diode Forward Current @ T _C =25°C	I _{SM}	35	
Avalanche Current @ L=0.1mH	I _{AS}	8	mJ
Avalanche Energy @ L=0.5mH	E _{AS}	6	
Total Power Dissipation	P _D	T _C =25°C	W
		T _C =100°C	
		T _A =25°C	
		T _A =70°C	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Steady State	Unit
Thermal Resistance, Junction-to-case	R _{θJC}	4	°C/W
Thermal Resistance, Junction-to-ambient	R _{θJA}	52	

Note:

- *a. The power dissipation P_D is based on T_{J(MAX)}=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
- *b. The value of R_{θJA} is measured with the device mounted on 1 in² FR -4 board with 2 oz. copper, in a still air environment with T_A=25°C. The power dissipation P_D is based on R_{θJA} and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
- *c. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

Electrical Characteristics (T_A=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	100	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	2	-	4		V _{DS} =V _{GS} , I _D =250μA
G _{FS}	-	3	-	S	V _{DS} =10V, I _D =2A
I _{GSS}	-	-	±10	μA	V _{GS} =±16V, V _{DS} =0V
I _{DSS}	-	-	1		V _{DS} =80V, V _{GS} =0V
R _{DS(ON)}	-	55	75	mΩ	V _{GS} =10V, I _D =2A
Dynamic					
C _{iss}	-	412	-	pF	V _{DS} =50V, V _{GS} =0V, f=1MHz
C _{oss}	-	68	-		
C _{rss}	-	18	-		
R _g	-	5.7	-	Ω	f=1MHz
Q _g *1, 2	-	6.7	-	nC	V _{DS} =50V, I _D =2A, V _{GS} =10V
Q _{gs} *1, 2	-	2	-		
Q _{gd} *1, 2	-	1.2	-		
t _{d(ON)} *1, 2	-	8	-	ns	V _{DS} =50V, I _D =2A, V _{GS} =10V, R _{GS} =1Ω
t _r *1, 2	-	16	-		
t _{d(OFF)} *1, 2	-	17	-		
t _f *1, 2	-	14	-		
Source-Drain Diode					
V _{SD} *1	-	0.82	1.2	V	I _S =2A, V _{GS} =0V
t _{rr}	-	22	-	ns	I _F =2A, dI _F /dt=100A/μs
Q _{rr}	-	18	-	nC	

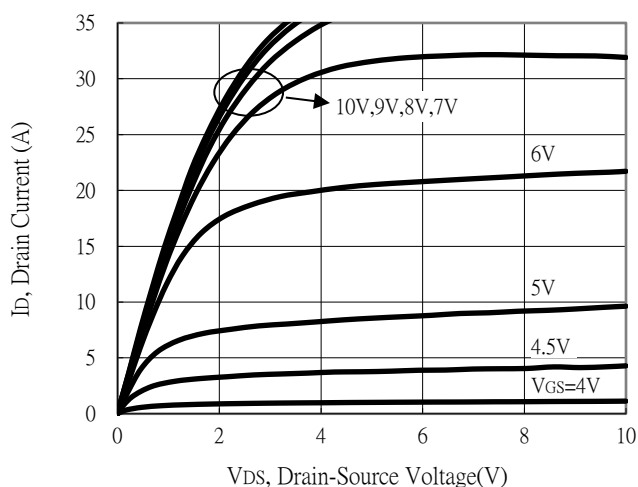
Note:

*1. Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

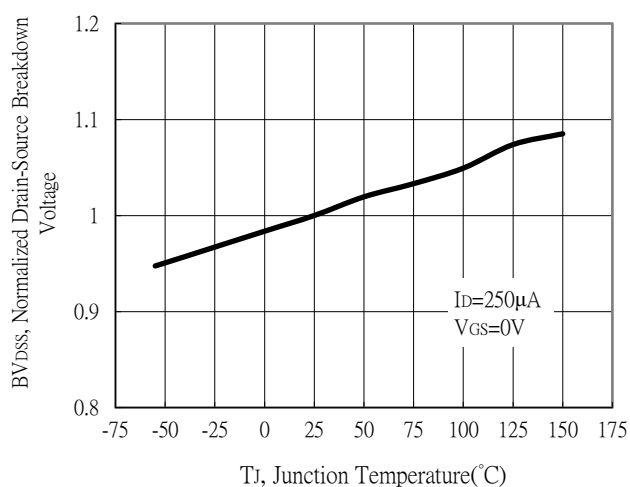
*2. Independent of operating temperature

Typical Characteristics

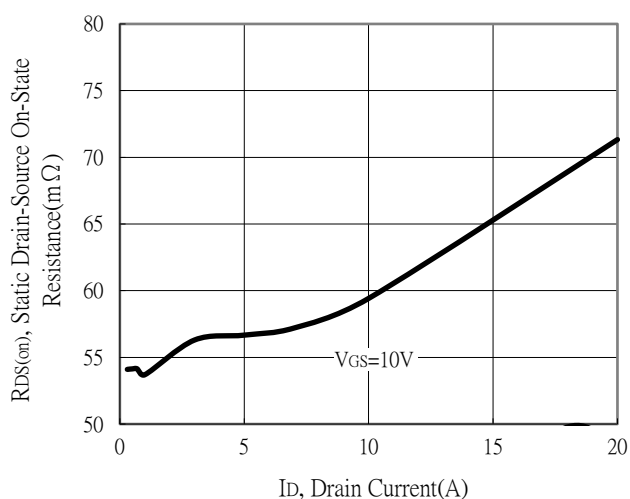
Typical Output Characteristics



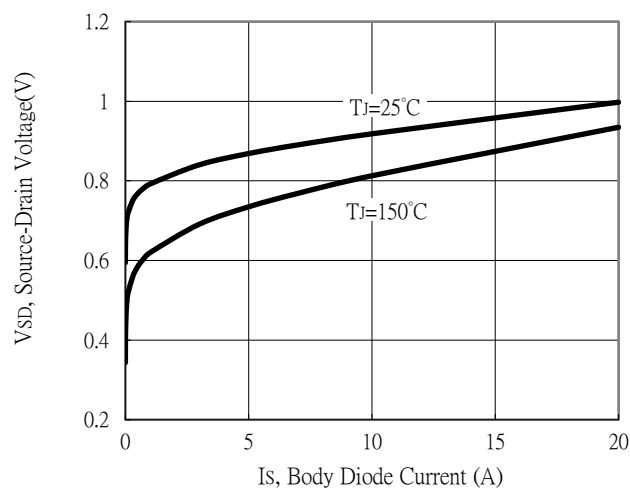
Breakdown Voltage vs Ambient Temperature



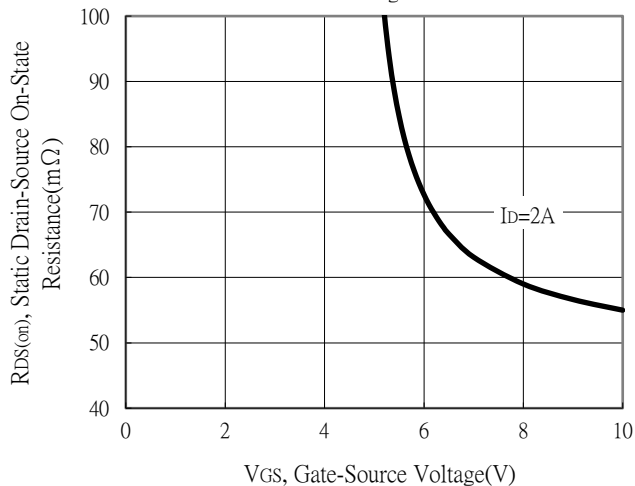
Static Drain-Source On-State resistance vs Drain Current



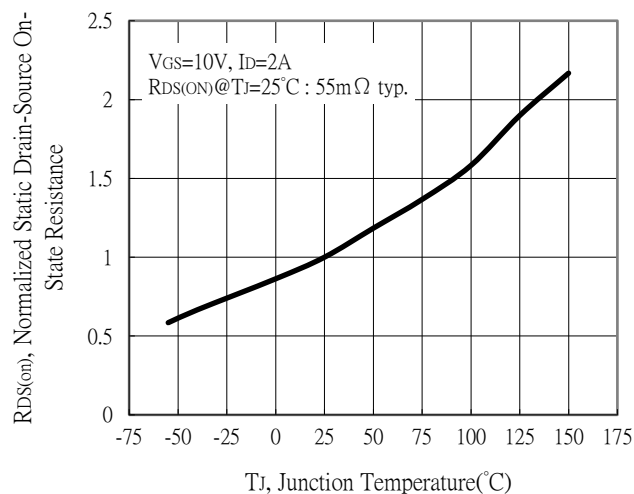
Body Diode Current vs Source-Drain Voltage



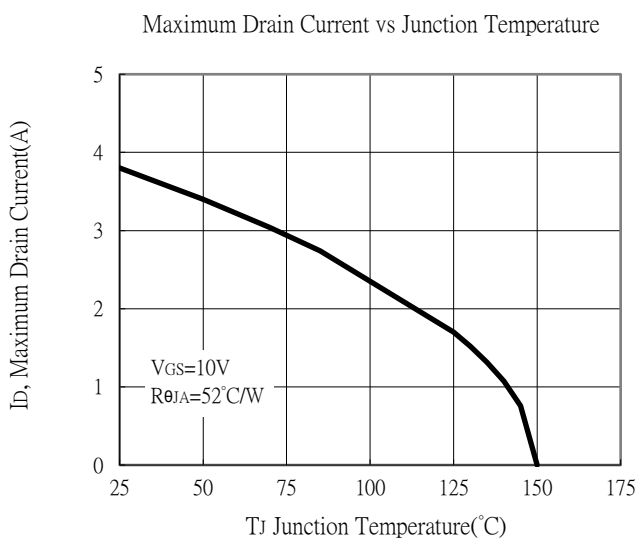
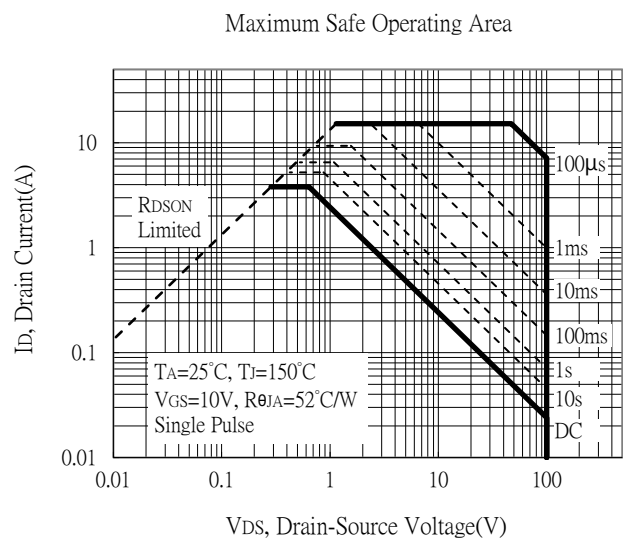
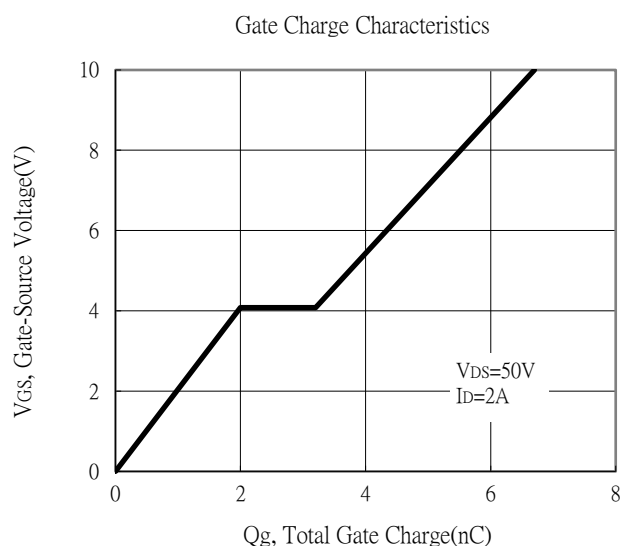
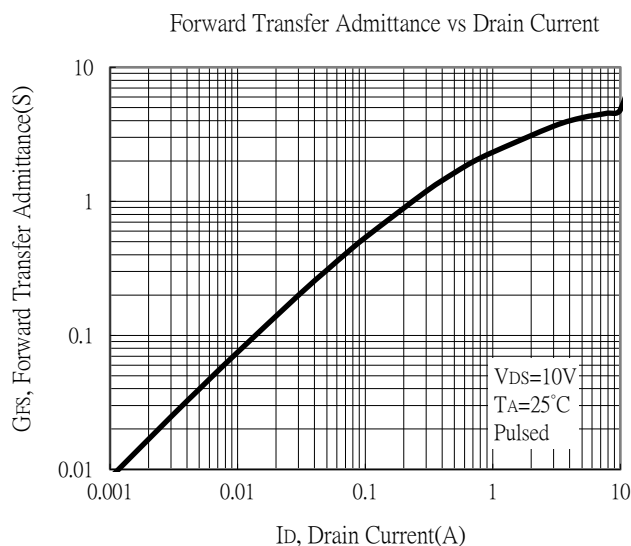
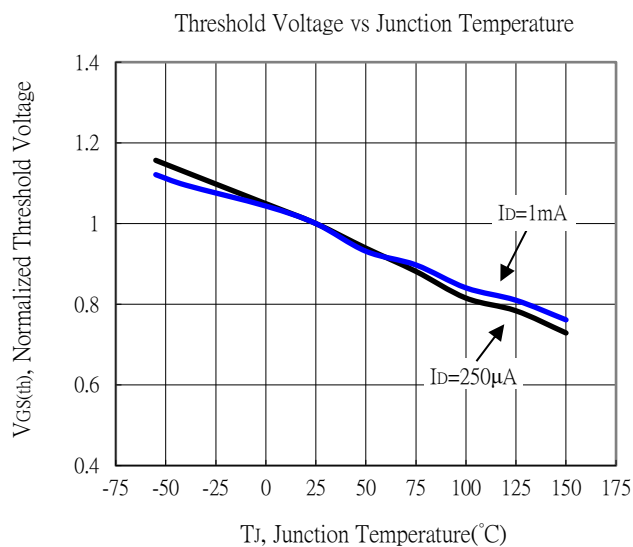
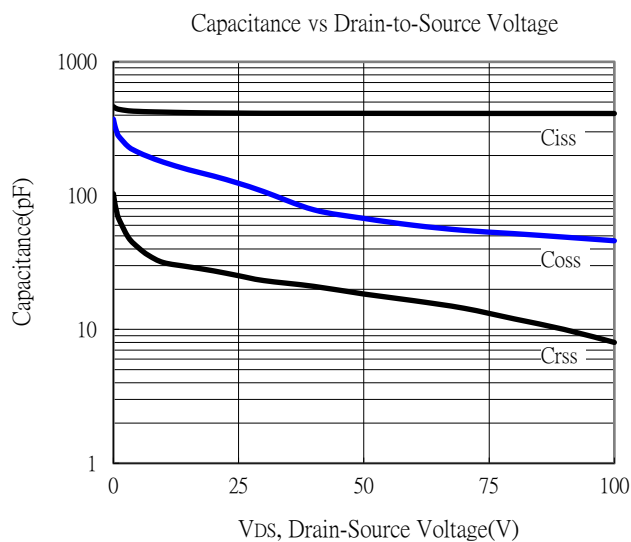
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Drain-Source On-State Resistance vs Junction Temperature

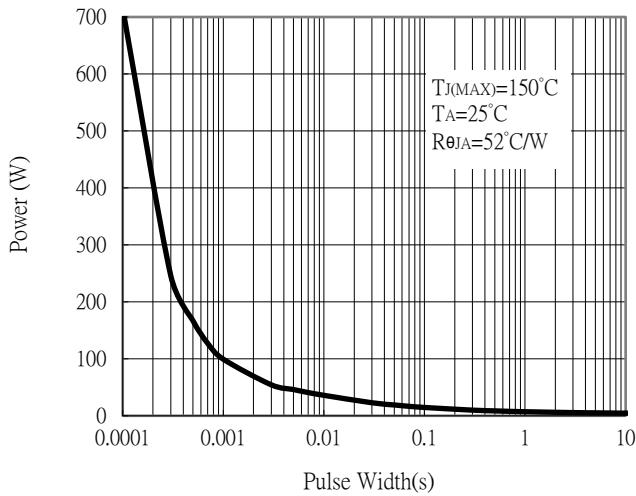


Typical Characteristics (Cont.)

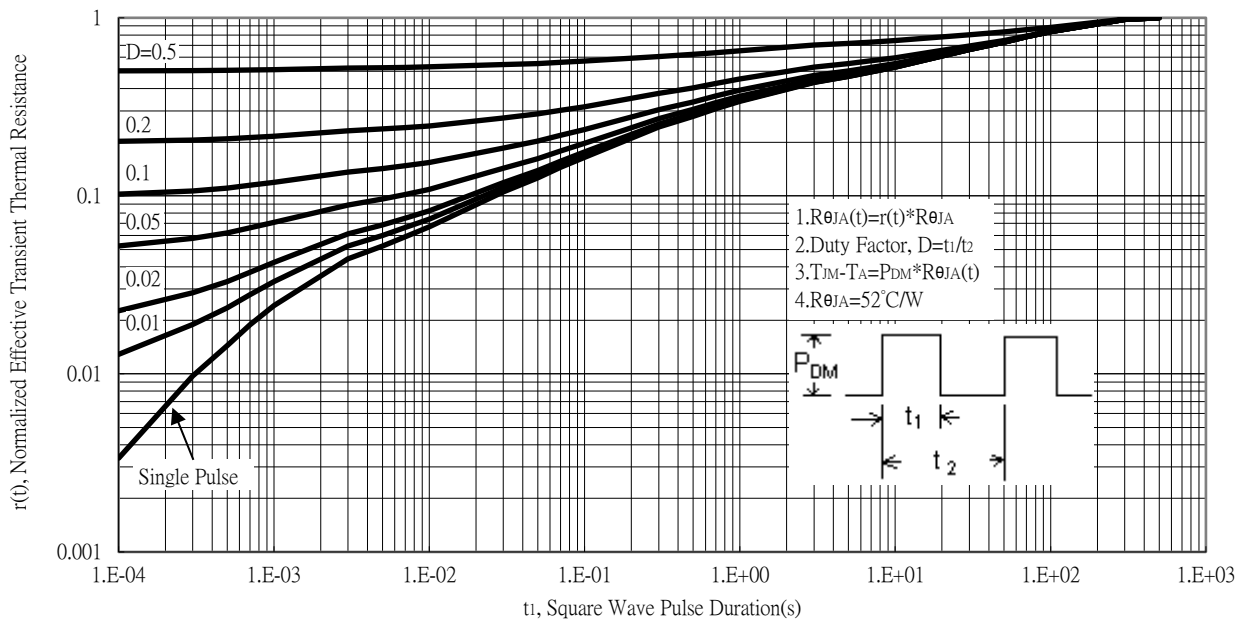


Typical Characteristics (Cont.)

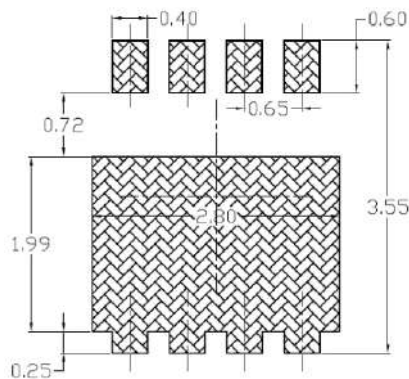
Single Pulse Power Rating, Junction to Ambient



Transient Thermal Response Curves

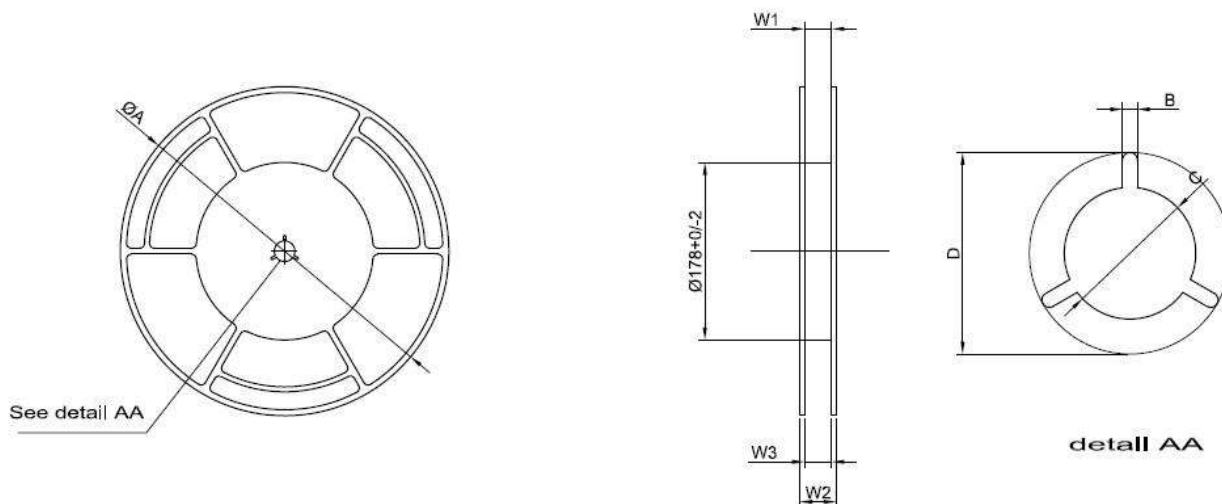


Recommended Soldering Footprint



Unit : mm

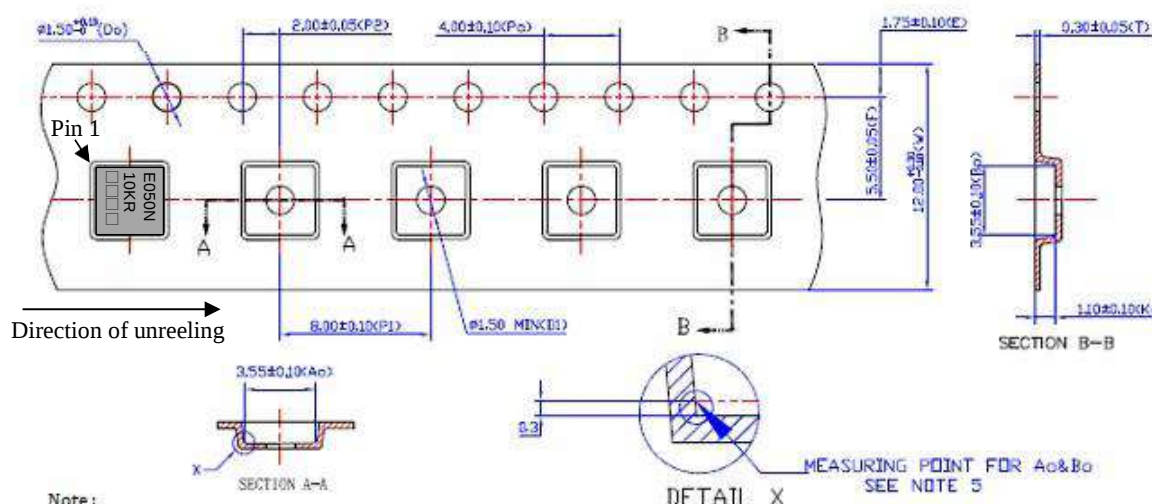
Reel Dimension



TAPE SIZE	A	B	C	D	W1	W2	W3
12mm	330 ± 2.0	2.9 ± 0.5	$13.0 \pm 0.5/-0$	23 ± 1.0	$12.4 \pm 2/-0$	18.4 ± 0.5	12~15

Unit : mm

Carrier Tape Dimension

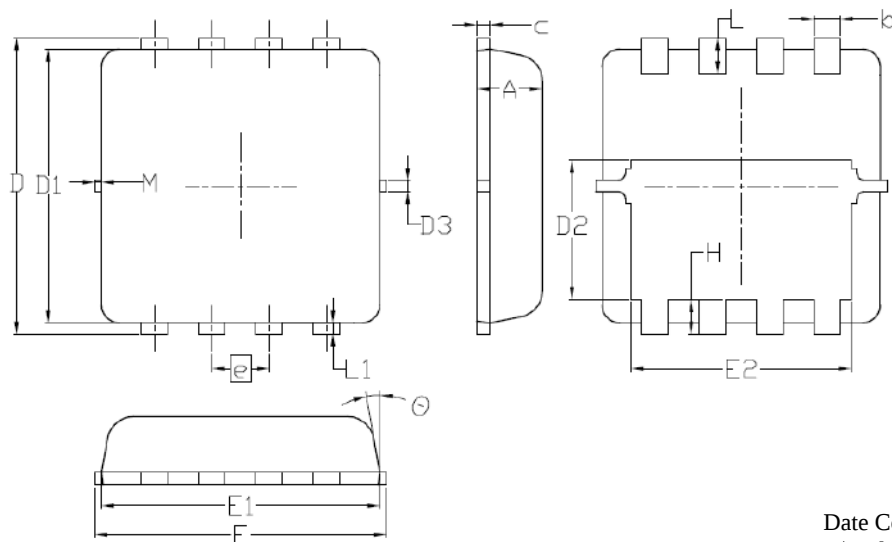


Note :

- 1.10 sprocket hole pitch cumulative tolerance : ± 0.2 mm.
- 2.Camber : Reference to carrier tape inspection manual.
- 3.Material : black conductive polystyrene.
- 4.All dimensions are in millimeters(unless otherwise specified).
- 5.A_o and B_o measured on a plane 0.3mm above the bottom of the pocket.
- 6.K_o measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
- 7.Pocket position relative to sprocket hole measured as true position of the pocket, not pocket hole.
- 8.Surface resistivity : $1 \times 10^4 \sim 1 \times 10^{11}$ ohms/sq

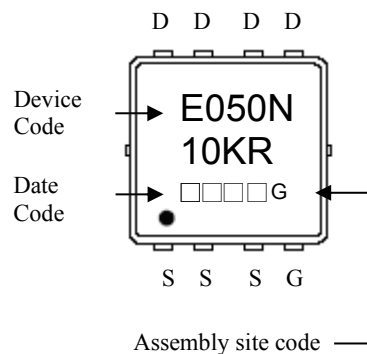
Unit : mm

DFN3x3 Dimension



8-Lead DFN3x3 Plastic Package

Marking:



Date Code(counting from left to right) :

1st code: year code, the last digit of Christian year

2nd code : month code, Jan→A, Feb→B, Mar→C,

Apr→D, May→E, Jun→F, Jul→G, Aug→H,

Sep→J, Oct→K, Nov→L, Dec→M

3rd and 4th codes : production serial number, 01~99

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.70	0.80	0.028	0.031	E1	3.00	3.20	0.118	0.126
b	0.25	0.35	0.010	0.014	E2	2.39	2.59	0.094	0.102
c	0.10	0.25	0.004	0.010	e	0.65	BSC	0.026	BSC
D	3.25	3.45	0.128	0.136	H	0.30	0.50	0.012	0.020
D1	3.00	3.20	0.118	0.126	L	0.30	0.50	0.012	0.020
D2	1.48	1.68	0.058	0.066	L1	0.13	TYP	0.005	TYP
D3	0.13	TYP	0.005	TYP	θ	-	12°	-	12°
E	3.00	3.40	0.118	0.134	M	-	0.15	-	0.006